



DoN Corporate Approach to Simulation Based Acquisition (SBA)

SBA Assessment in DoN

- **Consensus M&S can help acquisition, and PM commitment increasing**
 - **Many related initiatives with overlapping goals**
 - **No strong champion for SBA as an initiative, and OSD pressure has receded**
 - **Some SBA objectives seen as too hard, risky or costly**
 - **Some think commercial advances alone will suffice**
 - **But SBA advances continue**
- ...but little cross-contractor reuse and little M&S expertise in most program offices**
 - ...trying to understand & adopt them burdens PMs**
 - ...so SBA awareness is weak, accompanied by confusion about what SBA is and is not**
 - ...so much skepticism remains**
 - ...because a good case for DoD action hasn't been made**
 - ...because the benefits are real**

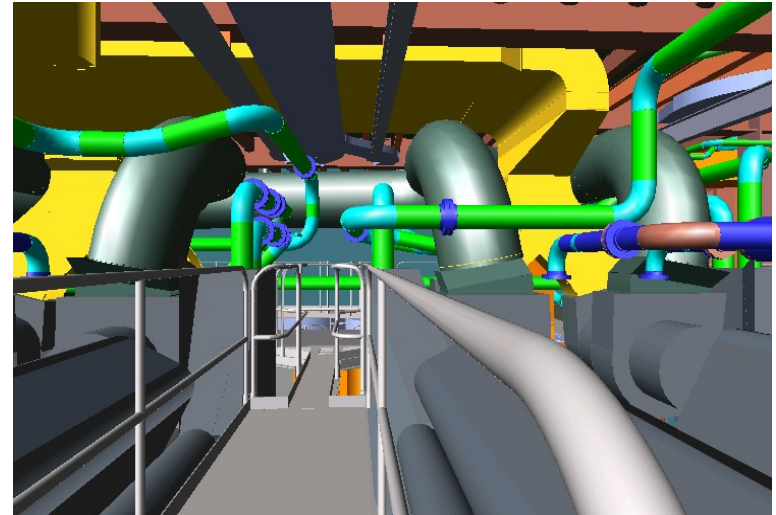
Some Navy Programs & Projects Contributing to and/or Influenced by SBA

Acquisition Programs

- **Joint Strike Fighter**
- **LPD-17**
- **AAAV**
- **DD 21**
- **CVX**
- **Virginia Class SSN**

Projects

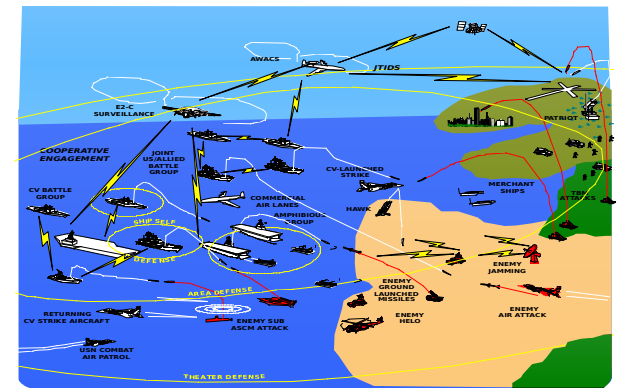
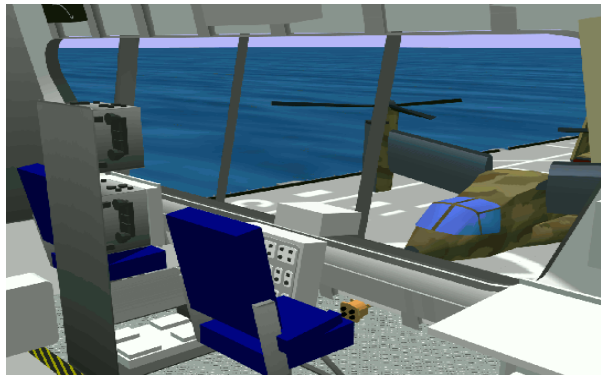
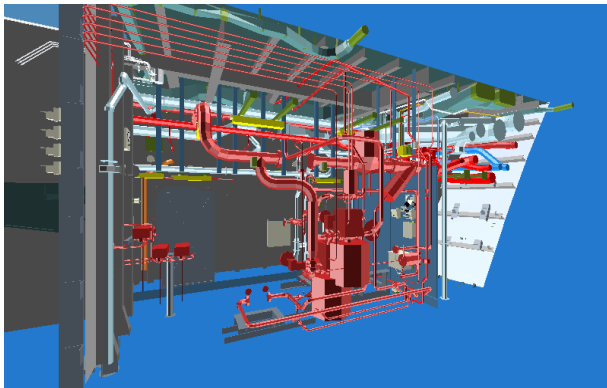
- **MARITECH Advanced Ship-building Enterprise (ASE)**
- **Navy/Industry Digital Data Exchange Standards Committee**
- **NATO Specialist Team for Warship Simulation Based Design and Virtual Prototyping**



- **Distributed Engineering Plant**
- **MIT's Distributed Object Modeling Environment (DOME)**
- **ONR undersea weapons SBD**
- **Leading Edge Advanced Prototyping System (LEAPS)**

Acquisition Reform Office (ARO) Tasking

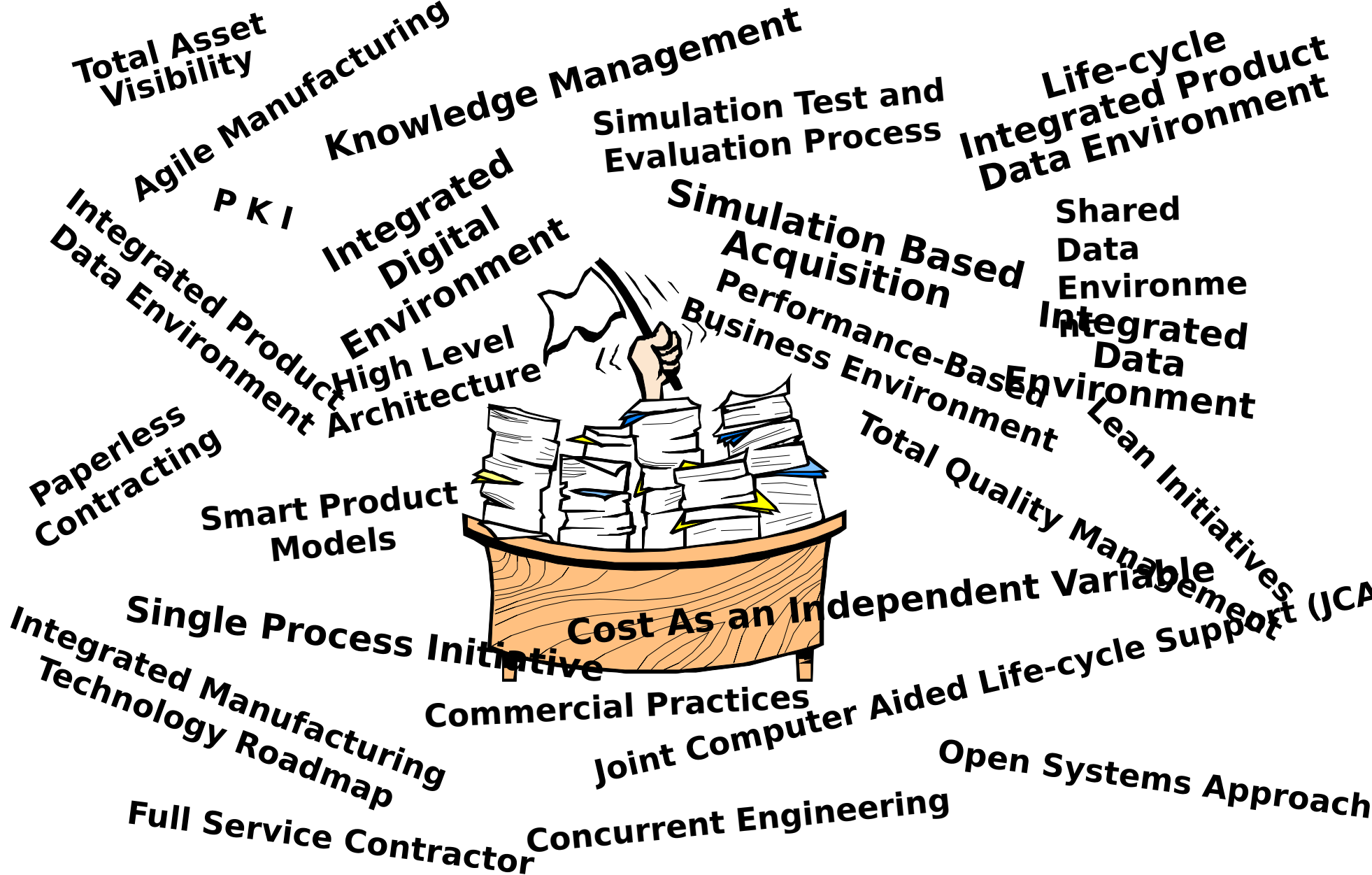
- **Develop a campaign plan to:**
 - **Realize the goals of SBA and related initiatives in a harmonized way**
 - **Contain cost by leveraging on-going projects, initiatives and standards activities, both government and commercial**
 - **Elicit DoN, PM and industry support and investment**
- **Coordinate execution of the plan**
- **Deliver real value to PMs, DoN, DoD, Industrial Base**



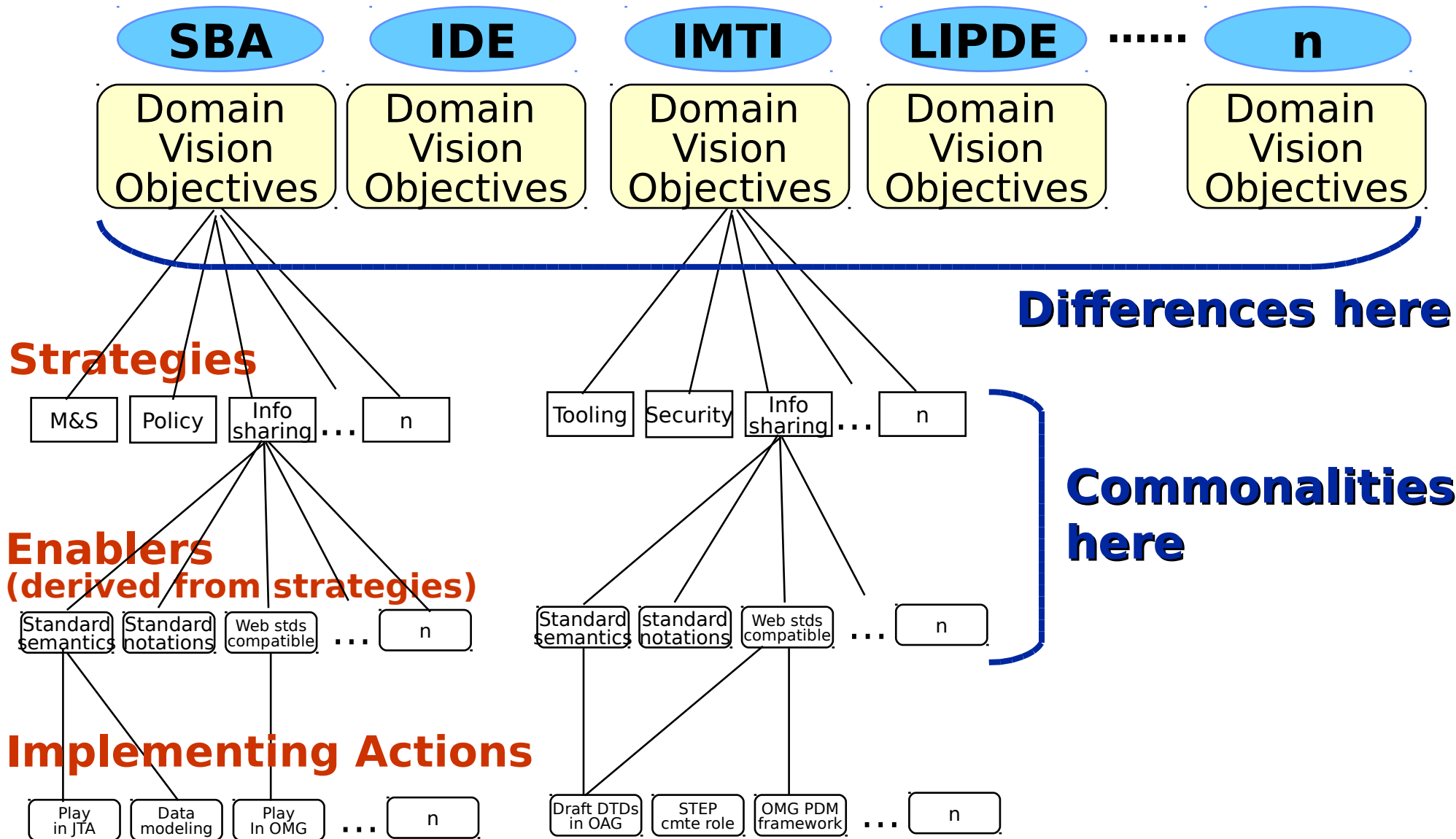
A Sample of SBA-Related Activities

- **Integrated Digital Environment:** *“every activity involved with the program throughout its...life cycle to exchange data digitally”*
- **Life-cycle Integrated Product Data Environment:** *“easily access product data regardless of where it resides...to improve material acquisition and sustainment...for full life cycle”*
- **Joint Computer-Aided Acquisition and Logistic Support:** *“an infrastructure...integrating digitized technical data that supports a weapon system’s acquisition and logistics life cycle”*
- **Integrated Manufacturing Technology Initiative:** *“M&S will be the way products and processes are designed and integrated”*
- **NASA Intelligent Synthesis Environment:** *“integrates...widely distributed...teams to rapidly create...affordable products”*
- **NIST Systems Integration for Manufacturing “Knowledge-based Interoperability Project”**
- **Naval Collaborative Engineering Environment:** *integration and interoperability within and across platforms through knowledge sharing and early solution sharing and implementation*

The PM's Dilemma



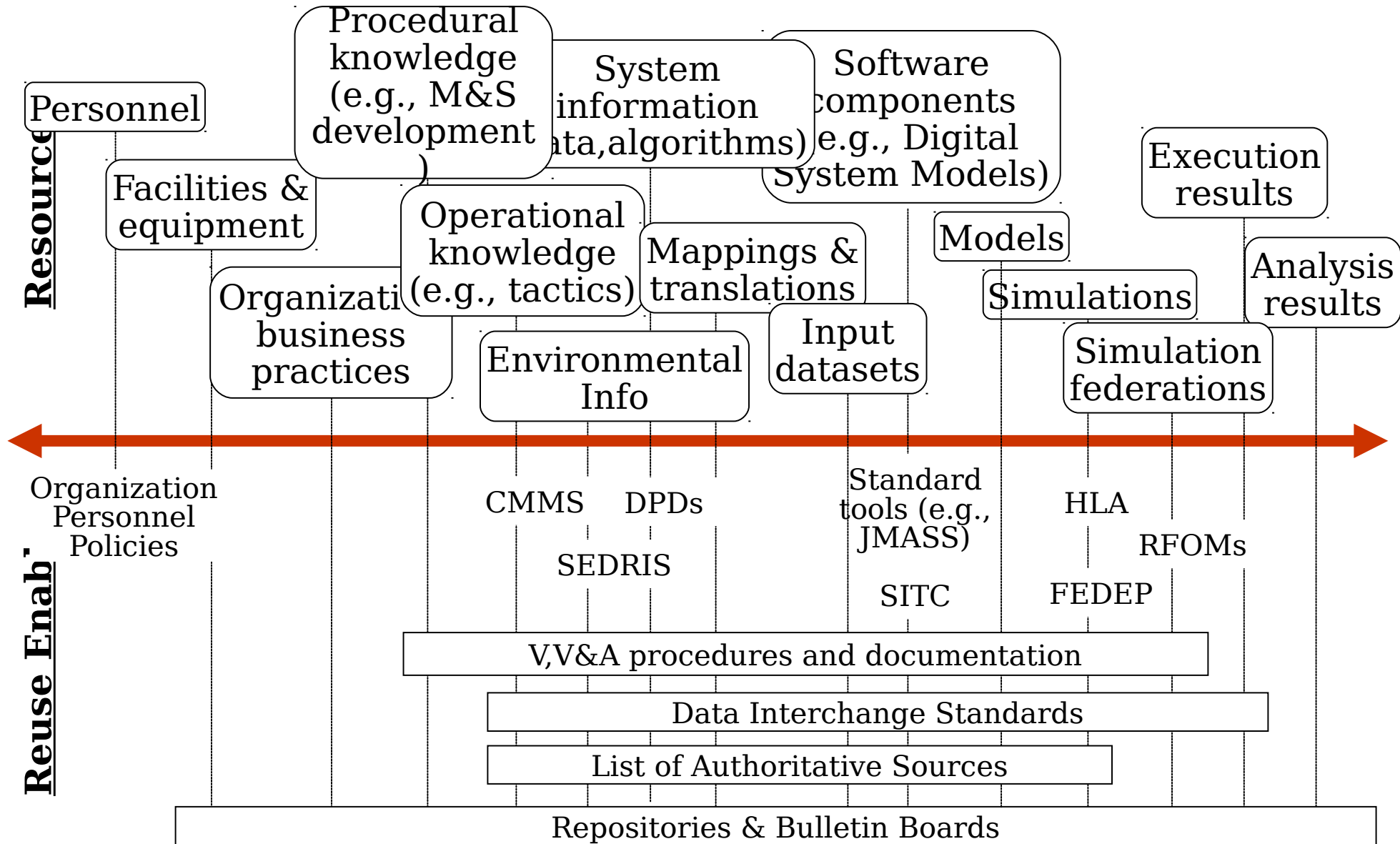
Considering the Initiatives



Common Strategies

- **More accurate and comprehensive M&S-based assessments earlier in the product development cycle, allowing a system to be designed, built, tested and operated in the computer before critical decisions are locked-in and manufacturing begins**
- **Elimination of activities that can be more cost-effectively performed in M&S, such as drawings, mock-ups, prototypes and some live testing**
- **Early and continuing collaborative exploration of the largest possible trade space**
- **Faster decision cycles/transactions through increased concurrency, digital information sharing and electronic interactions among dispersed stakeholders**
- **Maximum reuse of all acquisition resources - information, software, expertise, facilities, etc. - across work groups, program phases, programs and organizations**

Reuse Enablers



Classes of Enablers

- **Policy and law changes**
- **Process changes**
- **Authoritative sources for all information**
- **Data interchange standards**
- **Capable, reusable software: both applications and software components (e.g., digital system models)**
- **VV&A for both information and software**
- **Means to identify, obtain and protect reusable resources**
- **Tools and methods to manage collaboration & multi-domain optimization**
- **Business case**
- **Education, motivation and evolution of the work force**

Foundation for an SBA Work Breakdown Structure (WBS)

Implementation Planning



Management Strategy

Address corporately

Goals,
strategy

Cooperative
DoD, Service
and Industry
bodies

Composite
Plan of Action

Influence without hindering

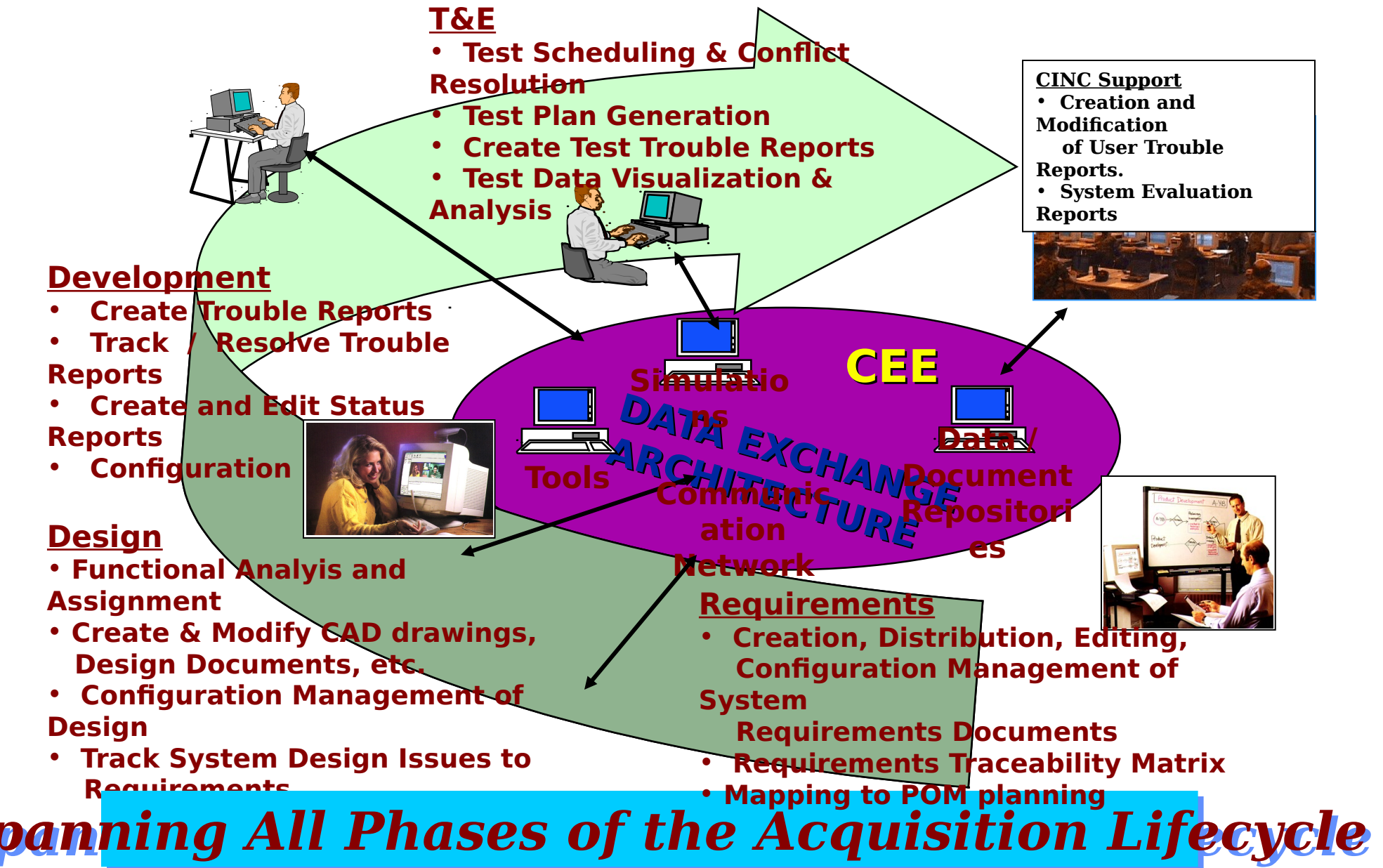
Grass root implementations PMs and
initiatives

Key Points and Recommendations

- **SBA shouldn't be considered in isolation of related initiatives that offer potential synergy**
- **Navy is pursuing a collaborative, systems engineering approach to realizing advanced acquisition environments**
- **Reuse spectrum map can clarify where opportunities exist, standards fit and actions are needed**
- **Composite list of enablers serves as a basis for SBA WBS**

CONOPS of NCEE “to be”

-- “Engineering-in” Interoperability



How Naval CEE Benefits PEOs/PMs

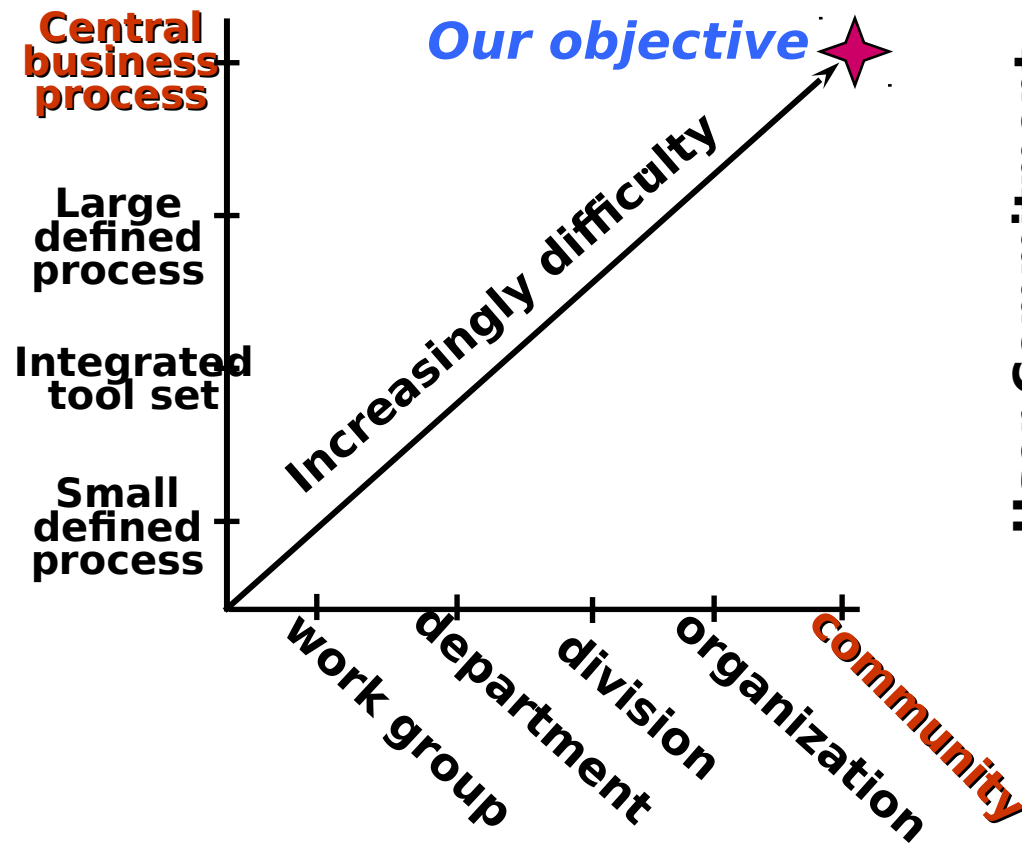
- ◆ **Takes body of knowledge that exists at individual system/platform level and extends to Force System Level**
- ◆ **Promotes collaboration and commonality across all stakeholder viewpoints for more effective/efficient system solutions**
- ◆ **Enables integration and interoperability within and across platforms through knowledge sharing and early solution sharing and implementation**
- ◆ **Provides the “what if” solutions as functions migrate from platform to platform and platform to shore as Joint System implementations become commonplace**

Funding

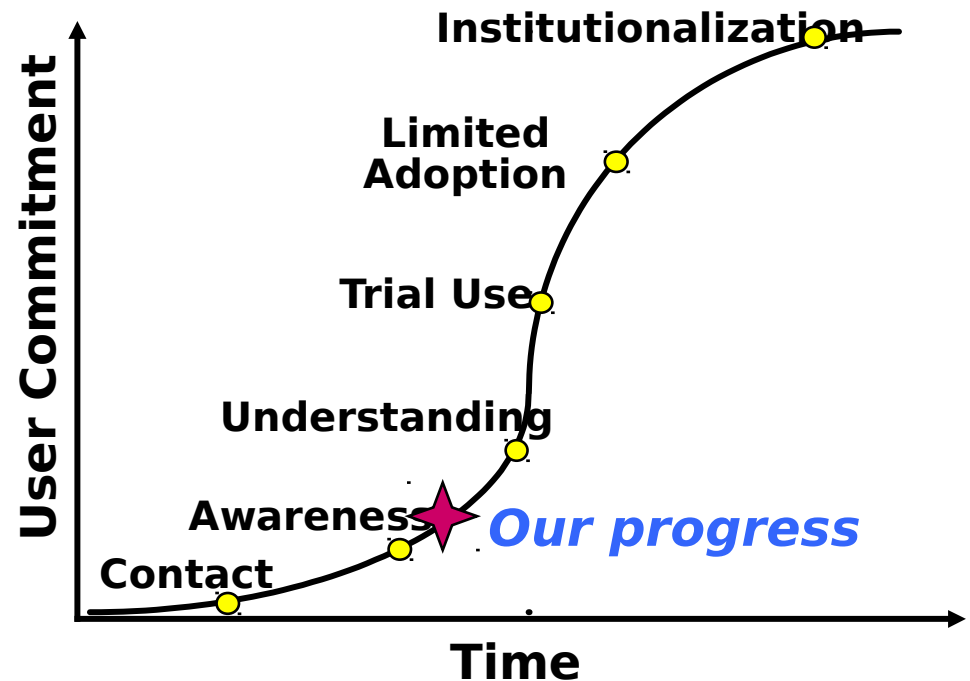
- **Much existing activity/funding can be leveraged**
 - **Any necessary additional investment may be small**
- **SBA ROI occurs at two levels:**
 - **Within programs: faster and smarter decisions, less cost, better product, more efficient T&E, etc.**
 - **Corporate level: system of systems analysis (wiser investment), more affordable programs, greater market share**
- **Funding is needed at both levels**
 - **PM investment will flow from practical proofs, business case, exposure to viable solutions**
 - **Corporate investment will flow from recognition that some enablers are beyond the reach of individual programs**

A Challenging Journey

Difficulty of Technology Transitions



How Organizations Commit to Change



Source: Daryl R. Conner and Robert W. Patterson, "Building Commitment to Organizational Change," *Training and Development Journal* (April 1983), p 18-30.